ABSTRACT

An automatic gain control technique is disclosed for adjusting the gain of an IF amplifier in a communication system, such as an OFDM or DMT communication system. The gain of an RF amplifier is controlled by a known RF automatic gain control circuit that generates an RF gain value. The disclosed IF automatic gain control (AGC) circuit controls the gain of an IF amplifier in the receiver. The disclosed IF AGC monitors the RF gain value, as well as pre-FFT and post-FFT signal energy measurements performed before and after a fast Fourier transform (FFT) stage, respectively, to maintain a desired set point. The IF AGC adjusts the previous IF gain value by an amount opposite to the adjusted RF gain value, if any. If there is no RF gain adjustment, then the IF AGC will adjust the IF gain based on thresholds established for the pre-FFT and post-FFT measurements. If the pre-FFT measurement is within a desired tolerance of the pre-FFT threshold, then the IF gain will be lowered in stepped increments. Otherwise, the IF gain adjustment is the minimum of the difference between (i) the pre-FFT measurement and its threshold, or (ii) the post-FFT measurement and its threshold, multiplied by a loop gain constant.

1200-516.app